Statistic Tests on models

→ Based on mean

⇒ t-test → normal distribution, two model has the same variance

⇒ Welch's t-test → Like t-tat but the variance may be difference

⇒ Rank Sum → general

t-tests is better for normal distribution

→ Based on Variance

⇒ ANOVA (Analysis of Variance)

one-way [1] Calculate mean of each population

①	②	③
1	2	2
2	4	3
5	2	4

$m_1 = 2.67$

$m_2 = 2.67$

$m_3 = 3$

$$m_0 = \frac{\sum m_i}{N} = \frac{m_1 + m_2 + m_3}{3} = 2.78$$

[2] Sum of Squares (SS)

$$SS_{\text{with In}} = \sum (x_1 - m_1)^2 + \sum (x_2 - m_2)^2 + \sum (x_3 - m_3)^2 = 13.34$$

$$SS_{\text{Total}} = \sum (x - m_0)^2 = 13.6$$

$$SS_{\text{Between}} = SS_{\text{Total}} - SS_{\text{within}} = 0.23$$

$$S_W^2 = V_W^2 = \frac{SS_W}{N-k} = 2.22$$

$$S_B^2 = \frac{SSB}{k-1} = 0.12$$

$k = 3$ number of offers

$N = 9$ number of all samples

$F < 1$ accept null $\quad F = \frac{SB^2}{SW^2}$

$F > 1$ reject null